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Supreme Court, U.S.

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IN THE  
**Supreme Court of the United States**  
OCTOBER TERM, 1995

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HERBERT MARKMAN AND POSITEK, INC.,  
*Petitioners,*

v.

WESTVIEW INSTRUMENTS, INC. AND  
ALTHON ENTERPRISES, INC.,  
*Respondents.*

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On Writ of Certiorari to the  
United States Court of Appeals  
for the Federal Circuit

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**JOINT APPENDIX - VOLUME II**

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EDITOR'S NOTE

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**United States Patent** (19) **Markham**

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**[34] INVENTORY CONTROL AND REPORTING SYSTEM FOR DRYCLEANING STORES**

**[76] Inventor:** Herbert Markham, 631 Farison Dr., Wynnewood, Pa. 19096

**[21] Appl. No.:** 90,697

**[22] Filed:** Aug. 28, 1987

**Related U.S. Patent Documents**

**Reissue of:**

**[64] Patent No.:** 4,590,346

**Issued:** Oct. 29, 1983

**Appl. No.:** 999,948

**Filed:** Apr. 13, 1984

**[31] Int. Cl.:** G06F 15/24; G06F 15/26  
**[32] U.S. Cl.:** 235/385; 235/383;

**[38] Field of Search:** 235/487; G06F/15/24, G06F/15/26  
235/385, 383, 487

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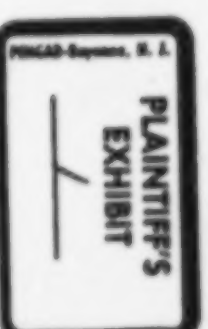
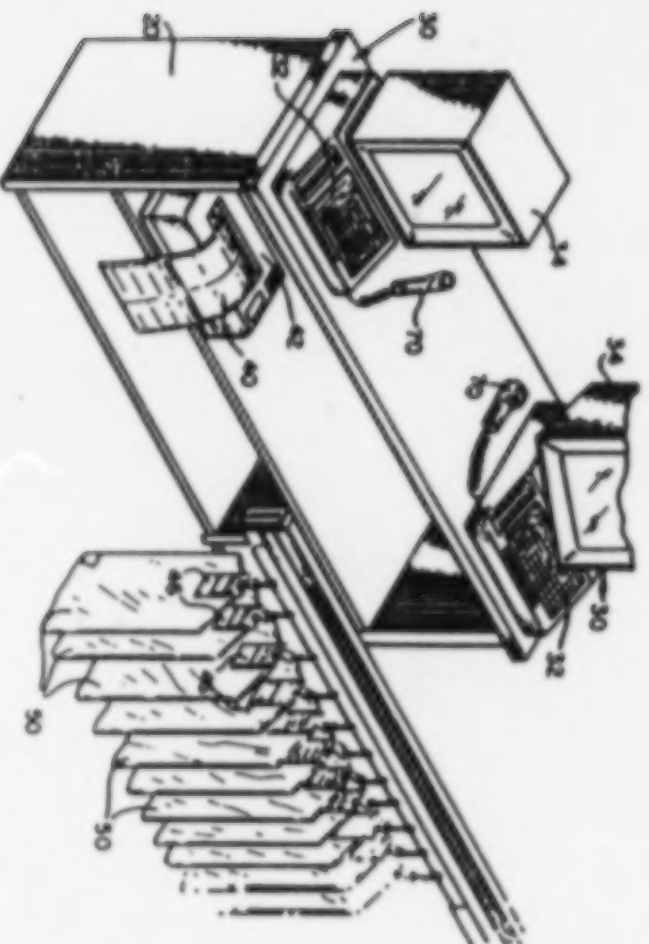
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**[37] ABSTRACT**

An inventory control and reporting system especially for retail drycleaners includes a data input keyboard having key blocks corresponding to information for identification and calculation of processing costs of laundry articles to be cleaned, a data processor adapted to calculate pricing information and to generate reports based upon such data input, the processor being connected to a printer and the processor and printer producing sequential multiple part bar code records and tags for attachment to the laundry articles in sequential transactions, and also as hard copies for the customer and for the establishment. The bar code portions of the records are generated by a dot matrix printer operating in a high resolution mode, the bar code portions being generated for a transaction contemporaneously with the transaction. The bar code tags are attached to articles of clothing and are used with scanning apparatus to facilitate generation of reports according to various management needs.

15 Claims, 2 Drawing Sheets





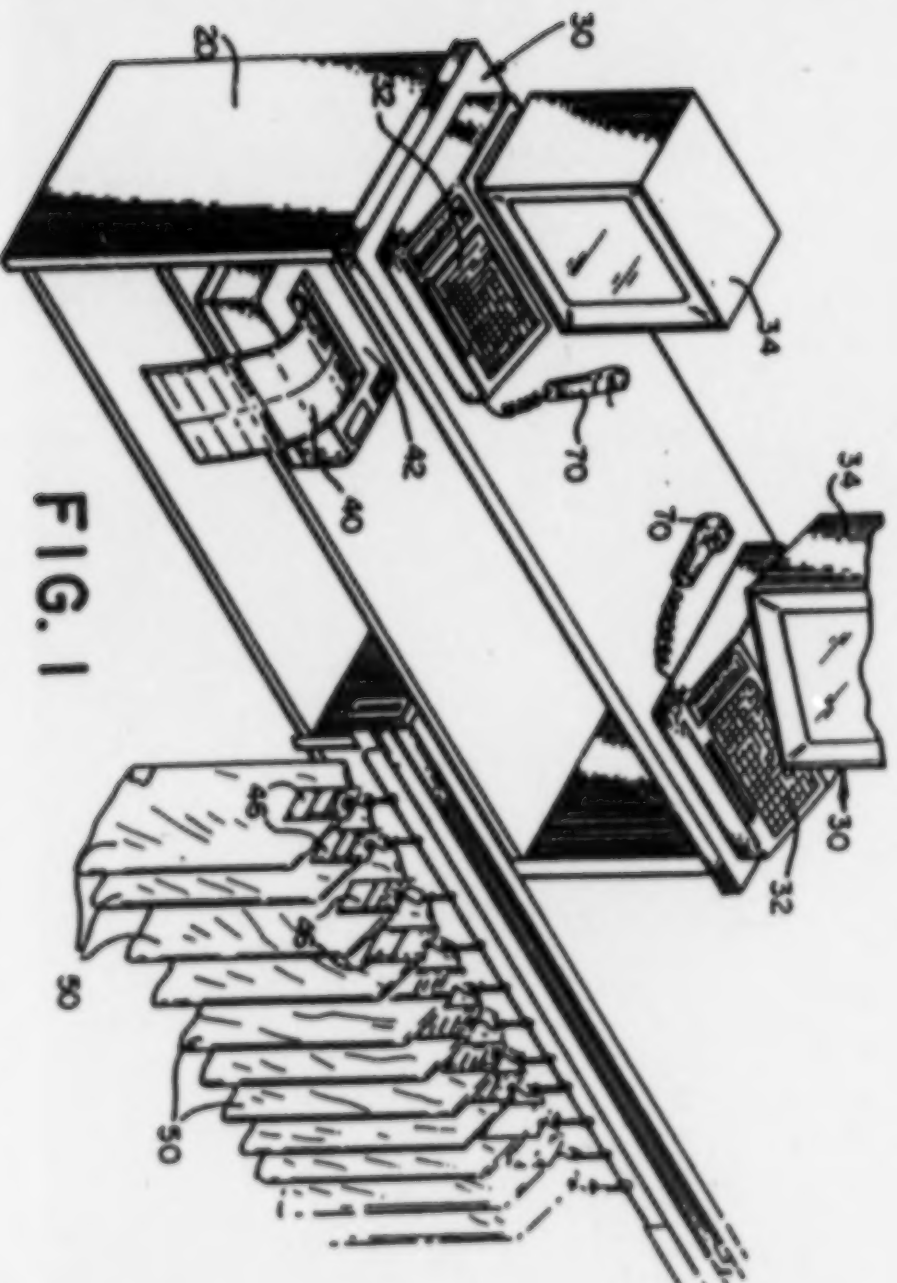


FIG. 1

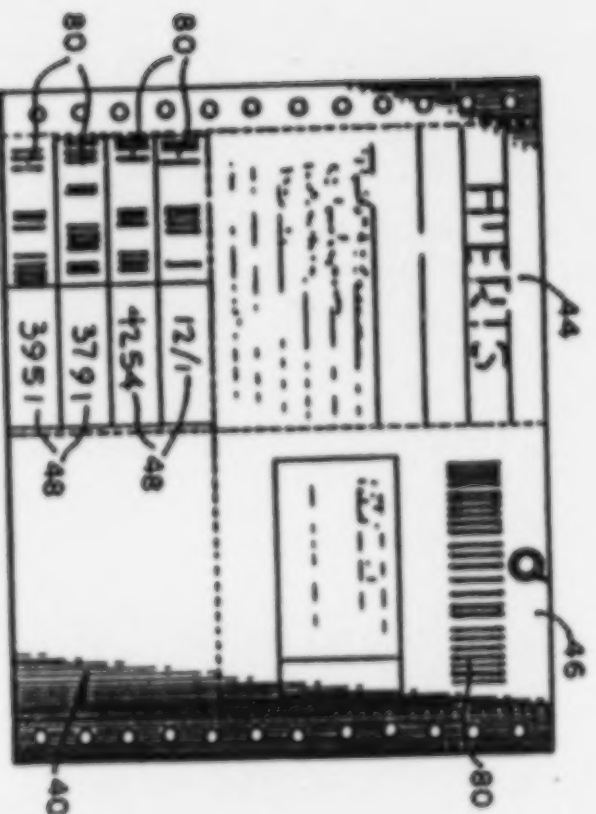


FIG. 2

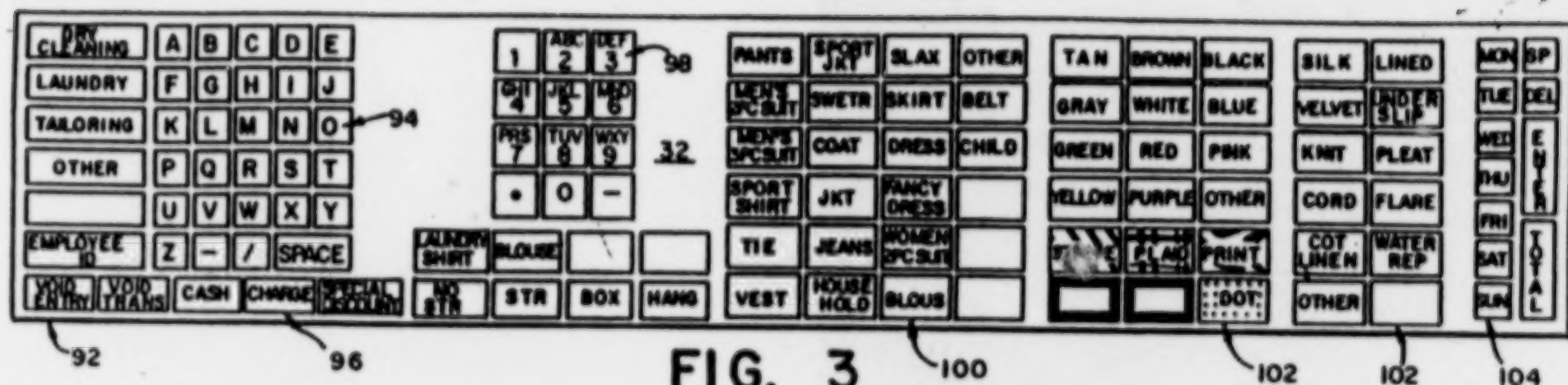
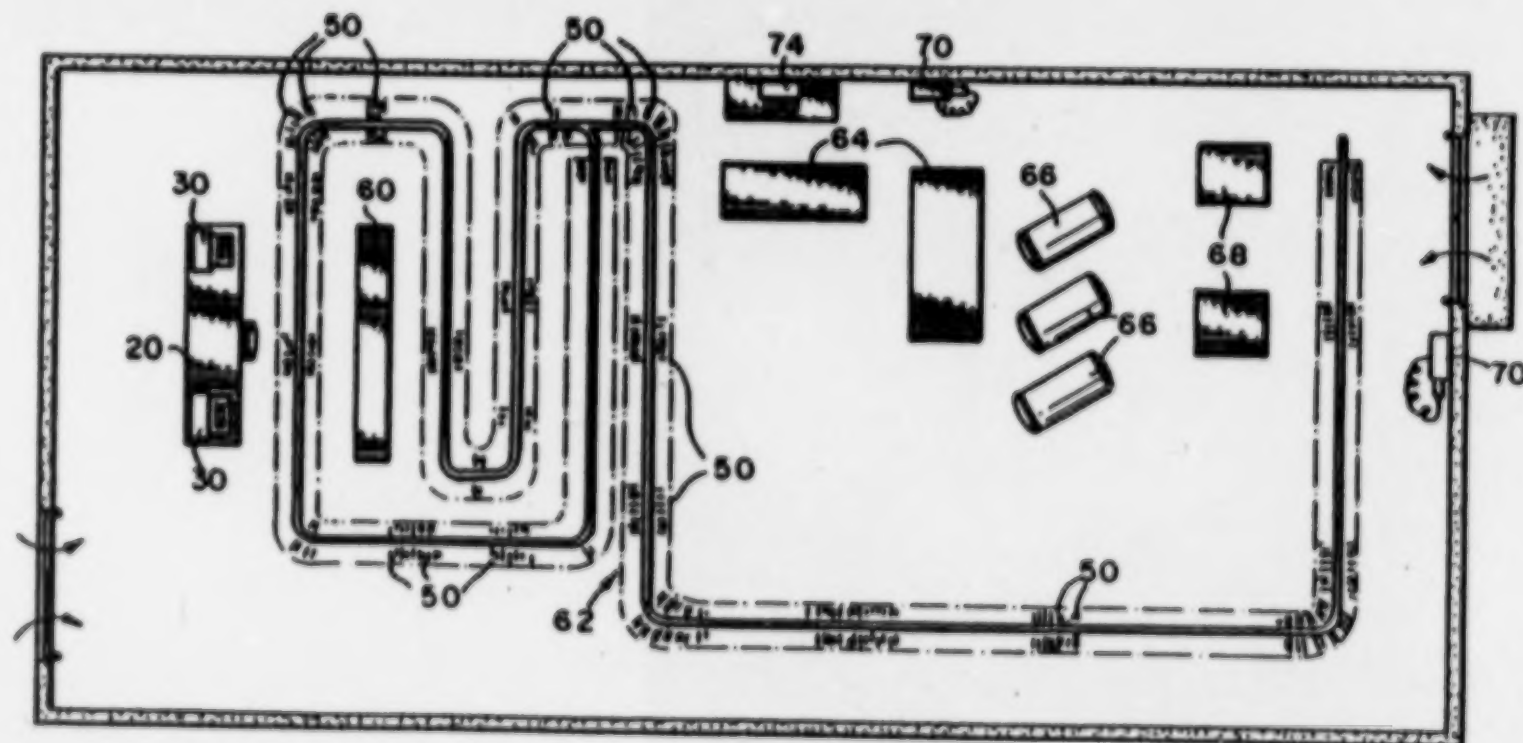


FIG. 3

FIG. 4



# INVENTORY CONTROL AND REPORTING SYSTEM FOR DRYCLEANING STORES

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates to inventory control devices capable of monitoring and reporting upon the status, location and throughput of inventory in an establishment. More particularly, the invention relates to such a system especially adapted to the peculiar needs of dry-cleaning establishments.

### 2. Description of the Prior Art

A basic function of inventory control is the counting of incoming and outgoing materials, and keeping a running total. In some situations, the identity of specific articles must be monitored, making inventory control somewhat more complicated. Automations in marking, sensing and routing can present enormous cost savings over manual operations for such establishments. Although the user is always subject to equipment failure, every step at which manual functioning and decision making can be eliminated likewise avoids time loss, errors and various losses associated with human operation.

An inventory control system particularly adapted for a drycleaning store has many needs in common with the usual merchandising distribution warehouse system. Furthermore, the relatively low cost of individual transactions and cleaning operations aggravates the need to cut costs. In general, the possible revenue to be gained by processing a single article is quite small in comparison to the possible dissatisfaction which could be generated with consumers by even small percentage losses of articles and the like.

The usefulness of automated apparatus for information and process control has further benefits. Most efficient operation of a drycleaning store may require that the articles be optimally divided into batches of similar attributes which may be processed as units. For example, all articles of a given type of fabric may be best processed under certain conditions of cleaning fluid type, temperature, and the like. The operator (or his supplier) can clean the largest number of articles at the least expense by most efficiently allocating his machines and materials to reflect the particular mix of supplies being presented by the customer.

Various systems of lot accumulation, inventory reporting and other such inventory control and operation systems are known in the art. Automated systems in which digital computers are employed for counting purposes are known in connection with laundry systems. An example of such a system is shown in *Wesner U.S. Pat. No. 3,876,075*. In that device, customer identification and sorted article counts are processed by computer in order to assist in the allocation of lots to machines. The *Wesner* patent is primarily concerned with counting the articles.

In more general inventory control systems, further sophistication is known. In *Block, et al., U.S. Pat. No. 3,478,316* inventory control in connection with a laundry or retail establishment is assisted by use of automatically-scannable tags attached to articles of clothing.

The tags are scanned upon delivery of articles, whereupon the inventory count is adjusted. *Block, et al.*, teach the usefulness of automation in laundry systems to assist in detecting dishonest clerks.

In connection with laundry systems, it has been common practice to apply a unique tag to a unit of laundry. The tag may have an alpha numeric (person-readable) indication and be merely stapled to a hem of an article of clothing. A different or more complicated indicia may also be attached to a hanger or the like, upon which the article of clothing is suspended. In any event, some form of code is needed for each article. The aforementioned patent to *Block, et al.*, appears to involve magnetically-readable indicia.

In *Glass U.S. Pat. No. 4,340,810* optically-readable indicia and alpha numeric indicia are combined in a single tag or unit for a general warehouse inventory control system. Automatic optical scanning equipment can be employed to form at least a part of the data input apparatus and, persons can verify the accuracy of processing by reviewing the alpha numeric data. Similarly, machine-readable information can be placed on the same tag with information to be read during manual distribution, for example, by the ultimate delivery person or the like. Such warehouse control systems are used to assign and operate upon article identifiers such as delivery route, day, stop, man and article number.

As disclosed in the patent to *Glass*, a number of printing and optical detection systems have been developed. Some systems have been developed for automatic recognition of alpha numeric characters, but it has been found that the most dependable of automatic scanning devices are not systems which rely on conventional alpha numeric characters. Instead, the least error prone and fastest automatic scanners rely upon codes generated from a coded sequence of parallel bars ("bar codes"). The bar codes are not easily decoded by humans.

The present invention is adapted to most efficiently apply a minimum of manual data input to an inventory control system especially adapted to a retail (i.e., customer-interfacing) drycleaning operation. A minimum of data is manually entered by an attendant via a keyboard having a series of keys which are uniquely intended to encode information which is peculiar to laundry operations, using a prescribed sequence and a minimum of keystrokes. The necessary data for reconciling the intake of articles and cash against inventory is provided using a particular input protocol. Article identification, customer identification, and descriptions needed for generation of cost and pricing reports are entered, and the articles to be cleaned are associated with a unique bar code indicia for later automatic or semi-automatic optical scanning and data input, whereby the progress of articles through the laundry and drycleaning system can be completely monitored.

Positive cross reference of bar codes and articles upon entry into the system, under machine control, provides optimum capability of reconciling articles, cash and inventory.

The use of written indicia bearing an automatically-scannable bar code has been known in the art, and in connection with laundries. Companies producing business forms are currently supplying forms provided with a pre-printed bar code which may be optically scanned. These supplied multiple part forms, for example a three-part receipt form having carbon paper or other multi-



part impression material, are sold in sequentially-numbered supplies with a pre-printed bar code such that one or more of the forms may be associated with the laundry for later scanning.

Parts of multiple-part forms, for example, those saved for hard copies for the laundry management and the copy given to the customer as a receipt, need not be provided with bar codes. In order to identify a single customer or transaction with a single bar code, however, all the articles which that customer presents at the laundry must be somehow associated together, using an automatically optically scannable code to facilitate automatic reconciliation.

Inasmuch as the known pre-printed bar-coded forms are supplied rather than produced internally, the bar code itself must be read into the system, or a sequence number entered manually. The use of pre-printed bar code indicia can become somewhat expensive, in cost of pre-printed forms as well as time spent in using them.

Many product labels bear bar codes for product identification, which codes are predetermined for the product, and do not change from label to label. Production of unique codes for each successive label is much more difficult. A custom pre-printed bar coded form may appear to be a simple printed indicia, but the bar code is unique. While the forms may be simply printed except for the bar code, the bar code must be printed by a sophisticated automatically-advancing type printing press, generating unique bar codes. Therefore, unique printed bar codes are expensive.

In a situation in which a certain number of bar coded form parts are required, for example, one each for management, the customer and a batch container for a customer's laundry articles, the cost of pre-printed bar code labels increases. The increase may be less than proportional, but even given the relatively smaller cost per bar code of pre-printing a label having a number of bar code repetitions, the present invention reduces the cost of such pre-printed indicia even further, and allows use of a variable number of bar code repetitions. One of the greatest savings of the invention is not the cost of the indicia but the fact that the indicia cannot be lost. The automatic production of labels at the point of sale precludes the possibility that even the most automatic of inventory control systems will be defeated by unaccountable loss of pre-printed labels.

The present invention concerns a way of printing a set of bar code labels coincidentally with the individual transaction. Accordingly, there is no possible loss of labels, and therefore a much smaller possibility that unrecorded and unaccountable transactions can be performed by an attendant. The throughput and the inventory can always be reconciled with the cash. The system is programmed such that data is entered for a given unique transaction, and a unique code is produced concurrently. Only a preferred terminal can void a transaction or otherwise disregard a unique identifying code. Therefore, the possibility of pilferage is minimized.

The system of the invention uses a dot matrix printer to generate bar codes. The processor controls the code produced and the reconciliation thereof. High-quality bar codes are preferably generated in a high resolution mode of printing using the dot matrix printer. Inasmuch as preparation of truly high resolution bar codes may require several seconds using even a relatively high-speed dot matrix printer, according to the system of the invention, printing of bar codes for a transaction commences on the first keystroke, whereby the unique indi-

cia and the articles become closely associated. The indicia may also be printed following the completion of a preceding transaction.

According to the invention, the optical scanning dependability of a bar code system is achieved in the same system which avoids the usual expense of multiple repetitions of such bar code tags. Moreover, the system and its operators are made truly accountable for each transaction and the indicia thereof. The added advantages do not impede the system. Data entry, article marking, optical detection of bar codes associated with articles, reconciliation capabilities, and all the benefits of fully automated inventory control and report generation are realized.

#### SUMMARY OF THE INVENTION

It is an object of the invention to specifically adapt an automated inventory control system to the particular needs of a retail drycleaning establishment.

It is also an object of the invention to employ automatically scanned bar code labels in a drycleaning establishment, the bar code labels being produced only under machine control and only upon need thereof.

It is another object of the invention to maximize accountability and automated control of inventory and management reporting capability, while minimizing the expense of supporting the system.

It is yet another object of the invention to facilitate data entry, inventory control and reporting by providing the greatest capability at the least cost.

These and other objects are accomplished by an inventory control and reporting system for drycleaners which includes a data input keyboard having key blocks corresponding to certain information needed for identification and calculation of processing costs of articles, a data processor adapted to calculate pricing information and to generate reports based upon such data input, the processor being connected to a printer for producing multiple part bar code records and tags to be associated with the laundry articles, and also as hard copies for the customer and for the establishment. The bar code portions of the records are generated by a dot matrix printer operating in a high resolution mode, the bar code portions being generated for a successive transaction immediately upon completion of a preceding transaction. The bar code tags may be attached to articles of clothing and/or batches thereof, for use with scanning apparatus to facilitate generation of reports according to various management needs.

#### BRIEF DESCRIPTION OF THE DRAWINGS

There are shown in the drawings the embodiment which are presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown in the drawings, wherein:

FIG. 1 is a schematic elevation view of a customer data entry station according to the invention.

FIG. 2 is an illustration of a sequential custom-printed, bar-coded tag and receipt set according to the invention.

FIG. 3 is an elevation view of the blocked customer keyboard of the invention.

FIG. 4 is a schematic plan view showing steps in a typical drycleaning operation according to the invention.



# DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The inventory control system of the invention requires the input of information together with the input of items to be placed in inventory, the information and the items to be uniquely positively associated with one another throughout processing. Every transaction is recorded, including identification of the articles placed in inventory. The more complete the information input and associated with each article, the better the possible reporting power of the system.

The present system is applicable to a range of embodiments of varying complexity. The best inventory control and management information reporting systems has the ability to determine and report the current location of any given article in inventory. The system should also be able to reconcile the inventory against the cash on hand, or as having finished processing through a certain area of the plant. According to the present invention, initial data input is minimized, and later logging of inventory articles, for example, passing stations within the system, or passing out of the system, is accomplished by means of an automatic optical scanner.

The optical scanning reads unique bar codes associated with articles or batches thereof. It is possible to have a full supply of sequentially numbered bar code tags available for use, but such a system cannot be fully reconciled due to the unaccountable loss of any of the pre-prepared tags. A lost tag, without any means of determining how the tag was lost, whether the tag had represented a transaction, or who was responsible, presents the possibility of proceeds diverted or articles lost. In connection with laundry and drycleaning establishments, in which relatively unskilled personnel having little commitment to the business are employed as attendants, it has been an occasional problem that attendant personnel will service a customer's requirements and pocket the proceeds. The customer may receive his cleaning without complaint, and all paperwork being unaccountably lost, it is difficult or impossible to locate the loss of profits or to meaningfully deter such activities.

Cost saving opportunities upon full data entry may be found at virtually all stages of processing throughout the business to be monitored by the data processing system. Given the relevant data, management information can be developed in the form of statistics about various sub-operations within the overall system. These statistics reveal opportunities for cost-savings or improvements in efficiency. For example, with minimal input and attention to the processing and location of specific articles, it may be possible to determine whether cyclical variations in throughput can be balanced to enable operation with less equipment or personnel. It may also be possible to determine whether a problem which appears to occur randomly in the inventory (e.g., damage to garments) can be uniquely associated with a certain piece of equipment or the like, which piece of equipment may need repair. There are only a few of many possible gains from full data input and reporting. The present system facilitates both accountability and ease of data input, and uses hardware capable of sophisticated reports as well.

By generating the unique indicia associated with transactions, the invention removes the control step of associating a sequentially-numbered ticket with a trans-

action. The possibility of phantom transactions in which the attendant processes articles without tickets, or uses a ticket without entering data, is precluded. Accordingly, article identification, accumulating lost for processing, and the general ability to reconcile system operations, are improved and made dependable.

In FIG. 1, incoming articles to be placed in inventory are accumulated over a counter 20, having one or more data input and display terminals 30. Written records 40 are produced, and may be attached to garments 50 as they move through the processing system. At a plurality of locations throughout the system, optical scanning devices automatically, or semi-automatically read codes placed on the written records attached to laundry articles in the area, whereby reports of desired complexity may be generated.

When a customer brings incoming laundry to counter 20, an attendant enters identifying information on terminal 30 by means of keyboard 32. The keyboard is designed more fully hereinafter. At least information as to the customer's identity is required, together with information as to the type of articles being deposited and the particular operations, such as drycleaning, to be performed on the articles. This information is manually entered on a data input device especially adapted for drycleaning operations, and is stored in the system memory.

A data processing device such as a digital computer processes and stores the data entered by keystrokes at keyboard 32, and displays information as required on CRT terminal 34. The processor is programmed to associate sequential customers and/or transactions with a unique indicia, generally a number, whereby the customer and/or transaction number can later be used to call up information associated with it. This information is used to generate management information reports, or at the least to accumulate and report transactions and/or totals such as the proceeds collected by the attendant.

The data processor may be located under the counter, or otherwise conveniently located throughout the establishment and connected to the remaining system elements by means of any convenient data link. In close physical proximity to the attendant's station is a printer 42, for generating a hard copy 40. The printer is operable under control of the data processing device to generate written records reflecting the stored records entered on the input device and associated with particular customers and transactions. The written records have several uses, including providing a receipt for the customer, providing a hard copy for use by management and providing a mark for attachment to individual articles in inventory, or for a group of articles in inventory. In this manner, the articles can be associated with the customers and with the transactions as well.

The written record includes a plurality of optically detectable bar codes, each having a series of contrasting spaced bands in different widths, which bands may be decoded as a unique indicia. The bar codes are themselves printed directly by the printer, rather than being provided as an element in a supply of pre-printed forms. The bar code records are printed sequentially as sequential customer transactions occur. Therefore, forms cannot be unaccountably lost. The transaction is necessarily entered. The processing system is adapted such that transactions cannot proceed until dispositive action is taken with each customer and with the written record generated by the system.

Coincident printing of bar codes on the written records with the appearance of each customer and transaction, as required by the invention, presents certain time constraints to operation of the system. If a customer has a simple transaction such as a single article to be cleaned in a standard way, the time during which the customer is serviced may approach the time required to produce a bar code record of sufficient resolution to be dependably read by conventional optical readers. In any event, the customer need not be required to wait until a preceding customer's paperwork is completed before his transaction can be processed.

According to the invention, a printer capable of dot matrix printing in two modes is used. The printer is adapted for alpha numeric printing at high speed and relatively low resolution in one mode, and also adapted for printing in a "graphics" mode at much lower speeds but higher resolution. Of course, the difference in modes can be a matter of processor "mode" as well. An example of a dual mode printer is identified as model 82A Microline 82A produced by the Obitata Company of Mount Laurel, N.J.

Operating the printer in the high resolution graphics mode, the system according to the invention is adapted to commence printing all the high resolution bar code characters required for a transaction immediately upon the first keystroke thereof. Alternatively, the code can be printed at the conclusion of a preceding transaction. By this method, time spent before or during customer contact is used to prepare the necessary bar graphed code tags. The customer never perceives any great delay, and high resolution bar code characters are generated without resort to expensive (and often unacceptable) bar coded stationary supplies.

Unlike the conventional laundry operating system in which pre-printed alpha numeric character labels (i.e., using Arabic numerals and letters) are attached to articles or containers for articles in inventory, according to the invention custom-printed bar code labels are used. Automatic scanning devices can be used to directly read the bar codes from items in inventory. An example of a preferred transaction label is shown in FIG. 2. With reference to FIG. 2, a multi-part form 40 preferably comprises a customer's ticket copy 44, an establishment ticket copy 46, including a bar code and a plurality of article tags 48, each article tag including both a bar code and a person-discernable alpha numeric character.

The layout of a hypothetical retail drycleaners is shown in FIG. 4. It will be appreciated that a variety of possible business structures and physical layouts will benefit from the system of the invention. For purposes of discussion, an establishment is shown having a customer service counter 20, separated from the article-processing area by wall 60. A track 62 stores and transports packages of articles, and may define a closed circuit. Article presorting stations 64, cleaning apparatus 66 and assembly stations 68 are sequentially passed by articles processed.

In many drycleaning businesses, the customer service areas are remote from the article processing areas, the service areas being only for collection and delivery of articles. The invention is applicable in either local or remote processing systems.

The system relies upon the bar code indicia 80, attached to or associated with articles or batches, and "read" using optical detector devices 70. Detectors 70 are located at various points in the system, including at least the customer service stations. The attendant need

only scan the tags 48 bearing bar codes 80 to dependably and quickly log an article or batch through a station. The tags 48 and bar codes 80 are originally generated together with the customer ticket 44 and established hand copy ticket 46, upon receiving the article from the customer.

The alpha numeric tags 48 are detached from form 40, printed on the spot, and attached to drycleaning items 50, as shown in FIG. 1. Individual article tags 48 may be attached to items in inventory, as is known in connection with pre-printed alpha numeric labels. In addition, a copy of the customer's ticket, for example the establishment ticket copy 46, can be attached to the bag or batch bundle or other unitary package containing a plurality of individual articles. The machine control of bar code generation can be further used to handle batch coding of packages containing article from multiple customers and the like.

The association of a bar code and an article or group of articles is only one portion of the larger inventory control system. The garment tags and customer ticket associate a unique indicia with transactions, persons and physical items in inventory; however, an inventory control system may also require a great deal of additional information to be associated with the articles, in order to provide all the possible savings of costs and all the appropriate information and reports. The data entry keyboard 32 of the invention, as shown in FIG. 3, is specifically adapted for entering information relating to retail drycleaning establishments. The specific adaptations is based upon groupings of switch pads, each grouping relating to a specific and important piece of information.

Keyboard 32 is laid out such that the operator can progress from left to right (or top to bottom, etc.) making one or more selections from each of the groups of blocks of switch pads. The switches themselves may be pushbuttons, for example, of the type used for typewriters and the like, or alternatively, a switch membrane can be advantageously used. If desired, data entry can be prompted by back-lighting the next sequential block (or blocks) of switch pads, under processor control. According to the preferred layout, as shown in FIG. 3 the attendant progresses from left to right, entering in order: the type of laundry (at area 92); one or more words or names to be associated with the customer (a letter block 94); the type of transaction (block 96); the number (block 98) and type (block 100) of articles and descriptions (blocks 102) the colors and fabrics thereof and, the date of required completion (block 104). These pieces of information are used not only to record the transaction, but also to immediately calculate the price to be charged the customer, and also to feed forward information to assist in planning the scheduling or batching to be processed in various laundry handling machines.

The price to be charged can be calculated based upon a calculation using relative cost factors such as the fabric type, color and delivery requirements, or a complete look-up table of particular prices can be stored in the data processor's memory for consultation based upon a matrix defined by the particular switches operated.

The keyboard includes buttons for at least several of the most common choices in each category. Preferably the most common choices within any keyboard is such that the layout of choices within are the most accessible, for example the upper left. A miscellaneous key for choice which are not found may also be included. The miscel



laneous key calls up a menu for the attendant to select further choices via programmed data entry rather than by choice of key. For example, upon the attendant's entry of a "fancy dress" selection, a menu is output to the CRT for further identification, e.g., "wedding". In the event that no appropriate selection can be found, a default entry of text may be made via the letter section of the keyboard.

Having entered a complete series of selections corresponding to the customer, article and job description, the attendant signals completion by operating the "Enter" or "Total" keys, whereupon the data processing system summarizes, prints or otherwise makes use of the information, as required for example to calculate pricing. The summarized customer or transaction information is printed on the hard copy tablet, the system printing in a high-speed low resolution mode, instead of the high resolution mode adapted for printing bar codes.

It will be appreciated that the uses to be made of the information, and also the reports which can be generated by taking further information regarding the current locations of articles within the system, will vary as widely as the physical descriptions and desired of dry-cleaning establishments. An example of a typical establishment, for purposes of discussion, is illustrated in plan in FIG. 4. The establishment includes the counter at which customers are serviced, the counter having an article transportation mechanism 70 associated therewith. The customer service station is known in more detail in FIG. 1; however, the details are there given, and associated with articles which may be sorted, cleaned in batches, and re-sorted into individual customer packages in the same establishment. Alternatively, as is perhaps more common, the individual retail drycleaning establishments are merely collection points for articles to be actually processed at a larger establishment. Remote processing systems have an even greater need for inventory control and automatic scanning of article containers and the like. The various areas shown in FIG. 4 could be near or far apart. At some point before processing, the articles to be cleaned must be sorted into groups of articles which may be appropriately processed together. After processing the articles are unsorted back into single customer or transaction packages. Both upon sorting, upon unsorting, and at any point in the actual cleaning process, it may be necessary or desirable to determine what particular articles or number of articles are located at a particular processing point. In this respect, each unique number or code or other indicia associated with an article, or with a transaction, remains "alive" until processing of all the articles is completed, and delivered to the customer together. Therefore, the inventory can be reconciled at any point in the sequence.

Upon sorting or unsorting the batches, for example at sorting stations 74, optical scanning apparatus 76 inputs data to reconcile the inventory with the expected inventory. Any loss of articles or errors in entering data can be immediately reported, before the physical association of articles from a given customer is lost. Also at this time, any physical damage which is noticed by the sorter can be entered on the system, for example by prohibition, against the possibility that the establishment will be held responsible for articles which arrive damaged. A complete description of the damage may be entered using a more sophisticated station 74, for example including a blocked-switchpad (not shown) having a

plurality of possible descriptions of a sort similar to the customer terminal keyboard 32.

After processing, optical detection of bar codes is again useful to permit the reorganization of articles into customer packages. Further programming may also be used in order to assist in sorting, for example, upon optical detection of a bar code, the data processing system could be adapted to indicate which of a plurality of packages was to include that article. Similarly, reconciliation of a customer package contents can be promptly indicated. In any event, the automatic association of articles within a transaction is one possible form of management information report. Alternative reports may include reports relating to through-put, machine loads, operator efficiencies, and the like.

Optical scanners capable of discerning bar codes are available from various companies. A popular device employing such apparatus is known as a "wand". Although various such devices for hand-held operation are usable, examples are the "Laser Scanner" portable bar code scanning system marketed by MSI Data Corporation, and the "Datawand," also marketed by that corporation. These devices may be peripheral data input devices, or may include local storage for later downloading to the central processor.

The apparatus according to the invention is preferably outfitted with various additional hardware elements adapted to point-of-sale terminals and the like. Processor-interfaced cash drawers, CRT monitors and the like are all appropriate for the general system disclosed.

The possibilities for management information reporting according to the present system are substantial. Of course, the full capabilities need not be provided for all establishments, and if provided need not be consulted at all times. Should the user so desire, the basic capabilities of inventory input and output logging, together with price calculation can be used constantly. Full management information can be supported, with added data entry, only when need is perceived to isolate a problem or to attempt an improvement in overall efficiency.

The invention having been disclosed, a number of further variations will now be apparent to persons skilled in the art. Reference should be made to the appended claims rather than the foregoing specification as indicating the true scope of the subject invention.

What is claimed is:

1. The inventory control and reporting system, comprising:
  - a data input device for manual operation by an attendant, the input device having switch means operable to encode information relating to sequential transactions, each of the transactions having articles associated therewith, said information including transaction identity and descriptions of each of said articles associated with the transactions;
  - a data processor including memory operable to record said information and means to maintain an inventory total, said data processor having means to associate sequential transactions with unique sequential indicia and to generate at least one report of said total and said transactions, the unique sequential indicia and the descriptions of articles in the sequential transactions being reconcilable against one another;
  - a dot matrix printer operable under control of the data processor to generate a written record of the indicia associated with sequential transactions, the written record including optically-detectable bar

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codes having a series of contrasting spaced bands, the bar codes being printed only in coincidence with each said transaction and at least part of the written record bearing a portion to be attached to said articles; and,

at least one optical scanner connected to the data processor and operable to detect said bar codes on all articles passing a predetermined station,

whereby said system can detect and localize spurious additions to inventory as well as spurious deletions therefrom.

2. The system of claim 1, wherein the written record comprises further indicia in addition to the bar codes, wherein the bar codes for a given transaction are automatically generated by the data processor and printer immediately upon commencement of an entry for the given transaction, and all unique sequential indicia generated are associated with sequential transactions, thereby preventing entry of unaccountable articles into inventory due to association of said unaccountable articles with spurious written records.

3. The system of claim 2, wherein the further indicia comprises alpha-numeric indicia also reflecting information, the information relating to the sequential transactions, for verifying system operations.

4. The system of claim 3, wherein the printer is adapted to print in a higher resolution mode for printing the bar codes upon said commencement, and in a higher speed mode, for printing the further indicia upon completion of said manual operation.

5. The system of claim 1, wherein the written record has multiple separable parts printed concurrently, including a customer ticket, an establishment ticket and a plurality of article tags, at least one of the tickets and tags having a bar code printed thereon, and each tag being detachable from the written record for direct association with at least one of the customer articles.

6. The system of claim 1, wherein the data input device is a keyboard and the printer is operable to generate tags for direct attachment to articles comprising usable material, the articles being pieces of drycleaning.

7. The system of claim 1 adapted for specific use in a retail drycleaning establishment, the articles being articles to be cleaned, and comprising additional optical scanners at a plurality of stations along a sequence of retail drycleaning operations including sorting, cleaning and delivery, the indicia and the descriptions of articles being reconcilable at each of said plurality stations for localizing said spurious additions and deletions.

8. The system of claim 1, further comprising a preferred input means connected to the data processor, the preferred input means and the data processor interacting for preparation of the reports.

9. The system of claim 8, wherein only the preferred input means is capable of voiding a transaction having a

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unique sequential indicia associated therewith, and cancelling a written record thereof.

10. The system of claim 1, wherein the input device is a keyboard having alpha-numeric keys, and also having keys specific to a plurality of common attributes of the articles and common optional attributes of the sequential transactions, said common attributes being recorded using single key strokes.

11. The system of claim 10, adapted for use in a retail drycleaning operation, the articles being articles to be cleaned and the common attributes including articles types, colors, patterns, fabrics, special requirements and delivery requirements.

12. The system of claim 11, wherein a plurality of the keys correspond to attributes of the articles affecting the costs of processing thereof, the data processor being adapted to calculate pricing information based upon input from the keys.

13. The system of claim 12, wherein the input device further comprises keys specific to customer timing requirements affecting the cost of processing the articles, the data processor calculating costs based upon input from the keys.

14. An inventory control and reporting system, comprising:

a data input device having switch means for encoding information related to sequential transactions, each of the transactions having articles associated therewith, said information including transaction identity data and data relating to the transactions;

a data processor including memory operable for recording said information, means for generating an inventory report and means for associating sequential transactions with unique indicia sequentially assigned to the transactions and for generating at least one report of said transactions, the unique indicia and the data relating to the transactions being reconcilable against one another;

a printer operable under control of the data processor to generate a written record for each of the sequential transactions, the written record including optically-detectable bar codes printed only in substantial coincidence with each said transaction and at least part of the written record bearing a portion to be attached to said articles; and,

at least one optical scanner for data communication with the data processor and operable to detect said bar codes on all articles passing a predetermined station.

15. The system of claim 14, adapted for specific use in a retail drycleaning establishment, the articles being articles to be cleaned, and comprising additional optical scanners at a plurality of stations along a sequence of retail drycleaning operations including sorting, cleaning and delivery, the indicia and the data relating to the articles being reconcilable at each of said plurality of stations for localizing spurious additions and deletions to and from inventory.

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# AMERICA'S FIRST CHOICE FOR INVENTORY CONTROL

**DATAScan**  
FROM THE  
MAKERS OF **DATAMARK**

WESTVIEW INSTRUMENTS, INC.

INDUSTRIAL CONTROLS DIVISION • 6723 STELLA LINK • HOUSTON, TX 77005

PLAINTIFF'S  
EXHIBIT

PERGAD-Bayano, R. J.

Operating your Laundry/Drycleaning business without a good cash management and inventory control system can be expensive. The International Fabricare Institute and other industry authorities estimate that the amount of money lost through inventory shrinkage can vary from 3% to 6% of your annual gross dollars. That can be quite a bit of money. Westview Instruments developed the DATASCAN® Portable Bar Code Reader as the complete answer to inventory control. When used with the Datamark® Lister, Datascan® provides the strongest cash control system available today.

## HERE IS HOW THE DATASCAN® SYSTEM WORKS:

The Datamark® Lister prints an invoice number and a bar code on each laundry dryclean ticket processed. The Lister then stores in its computer memory the invoice number and the ticket cash total (up to 500 invoices). When this memory is full (or on a daily basis), all invoices are transferred to Datascan® memory, which can hold an incredible 8000 invoices. After a customer pays for his order, his paid invoice can then be removed from the Datascan® record by simply "wandering" the bar code on the paid invoice. Any invoices that are left in the Datascan® record are unpaid and, therefore, must be in inventory. After a physical inventory is taken, by simply "wandering" the bar codes on each invoice hanging on line, Datascan® will find all "extra" invoices and "missing" invoices, compute the inventory cash total, and provide a printed record.

**INVOICES REPORTED**

000130	6.90
000131	7.20
000132	4.50
000133	1.50
000134	20.44
000135	NO RECORD
000136	8.87
000137	3.87
000138	4.50
000139	NO RECORD
000140	NO RECORD
000141	NO RECORD
000142	NO RECORD
000143	NO RECORD
000144	NO RECORD
000145	NO RECORD
000146	NO RECORD
000147	NO RECORD
000148	NO RECORD
000149	NO RECORD
000150	NO RECORD
000151	NO RECORD
000152	NO RECORD
000153	NO RECORD
000154	NO RECORD
000155	NO RECORD
000156	NO RECORD
000157	NO RECORD
000158	NO RECORD
000159	NO RECORD
000160	NO RECORD
000161	NO RECORD
000162	NO RECORD
000163	NO RECORD
000164	NO RECORD
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000169	NO RECORD
000170	NO RECORD
000171	NO RECORD
000172	NO RECORD
000173	NO RECORD
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000175	NO RECORD
000176	NO RECORD
000177	NO RECORD
000178	NO RECORD
000179	NO RECORD
000180	NO RECORD
000181	NO RECORD
000182	NO RECORD
000183	NO RECORD
000184	NO RECORD
000185	NO RECORD
000186	NO RECORD
000187	NO RECORD
000188	NO RECORD
000189	NO RECORD
000190	NO RECORD
000191	NO RECORD
000192	NO RECORD
000193	NO RECORD
000194	NO RECORD
000195	NO RECORD
000196	NO RECORD
000197	NO RECORD
000198	NO RECORD
000199	NO RECORD
000200	NO RECORD
TOTAL	109.47

**INVOICE LISTING**

000130	3.50
000131	2.75
000132	3.50
000133	8.75
000134	15.10
000135	6.50
000136	3.50
000137	13.50
000138	3.50
000139	4.75
000140	3.44
000141	2.50
000142	2.50
000143	9.50
000144	8.87
000145	NO RECORD
000146	NO RECORD
000147	NO RECORD
000148	NO RECORD
000149	NO RECORD
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000185	NO RECORD
000186	NO RECORD
000187	NO RECORD
000188	NO RECORD
000189	NO RECORD
000190	NO RECORD
000191	NO RECORD
000192	NO RECORD
000193	NO RECORD
000194	NO RECORD
000195	NO RECORD
000196	NO RECORD
000197	NO RECORD
000198	NO RECORD
000199	NO RECORD
000200	NO RECORD
TOTAL	188.87

**LISTED INVOICES**

000130	3.50
000131	2.75
000132	3.50
000133	8.75
000134	15.10
000135	6.50
000136	3.50
000137	13.50
000138	3.50
000139	4.75
000140	3.44
000141	2.50
000142	2.50
000143	9.50
000144	8.87
000145	NO RECORD
000146	NO RECORD
000147	NO RECORD
000148	NO RECORD
000149	NO RECORD
000150	NO RECORD
000151	NO RECORD
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000185	NO RECORD
000186	NO RECORD
000187	NO RECORD
000188	NO RECORD
000189	NO RECORD
000190	NO RECORD
000191	NO RECORD
000192	NO RECORD
000193	NO RECORD
000194	NO RECORD
000195	NO RECORD
000196	NO RECORD
000197	NO RECORD
000198	NO RECORD
000199	NO RECORD
000200	NO RECORD
TOTAL	44.75 MISSING

## THE DATASCAN® SYSTEM STREAMLINES YOUR BUSINESS.

- Tracks 8000 invoices from up to 10 Datamark® Listers
- Speeds-up and simplifies the process of taking a physical inventory
- Identifies old or "dead" stock in inventory
- Provides a printed record of all paid invoices
- Gives complete cash control using just a simple cash register

The Datascan® Reader is fully portable: you charge its batteries with an AC adapter. It can be held in one hand or carried on its belt clip. Datascan® also has an easy-to-read 32-character display and a stainless-steel bar code wand. It is simple and very easy to use. And best of all, behind every Westview Instruments product stands our reputation for quality and customer satisfaction.

# WIZ

## WESTVIEW INSTRUMENTS, INC.

INDUSTRIAL CONTROLS DIVISION

6723 STELLA LANE

HOUSTON, TEXAS 77005

(713) 666-2326

# Stop Upcharge Losses

\$3.95? LAST TIME YOU CLEANED THESE  
SILK PANTS I PAID \$2.95.



Eliminate your losses by letting **DATA~~MA~~ARK XI** print your invoices neatly, legibly, and precisely. With over 65,000 automatic pricing combinations, **DATA~~MA~~ARK** gives you all the upcharges you deserve without the math errors. More importantly, you give your customers the consistent pricing they demand without the hand-written scribble.

## **DATA~~MA~~ARK** automatically:

- Records all incoming orders
- Tracks all unpaid orders
- Balances to the cash drawer and,
- Lists every missing invoice.

## **THAT'S CASH CONTROL!**

When pricing is done by hand, who is in charge of the price — you or your employee? Considering what you're losing, **DATA~~MA~~ARK** might just be less expensive than your next box of ball point pens.

**CALL US TODAY . . . (713) 668-2326**



With over 14 million hours of operation,  
**DATA~~MA~~ARK 3** set the standard. Now . . .  
**DATA~~MA~~ARK XI** sets the pace.

# **DATA~~MA~~ARK**

America's First Choice

# **WIZ**

**WESTVIEW INSTRUMENTS, INC.**

INDUSTRIAL CONTROLS DIVISION

6723 STELLA LINK

HOUSTON, TEXAS 77005-4391

(713) 668-2326

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# DATA MARK

AMERICA'S FIRST CHOICE

## THE MOST POPULAR PRICING MACHINE IN THE INDUSTRY ... FOR SOME VERY POWERFUL REASONS.

Automatically prices, multiplies,  
discounts, taxes, and totals ...  
accurately

Complete cash and inventory  
reports; production print-outs  
by garment and department

High-speed, double-dot printing  
for neat, legible tickets

Communications link to  
computer or  
**DATA-SCAN**  
bar code reader

Saves and recalls  
over 6500 invoices  
in inventory

Rugged ... designed to withstand  
the heat, lint, and chemical vapors  
found in every plant.  
No hard disks, disk drives, or diskettes

Preset pricing with multiple upcharges ...  
Over 65,000 pricing combinations  
assures correct upcharging for all garments.

100% Programmable keys for up to  
84 descriptors  
2-Level keyboard design doubles the  
upcharge possibilities

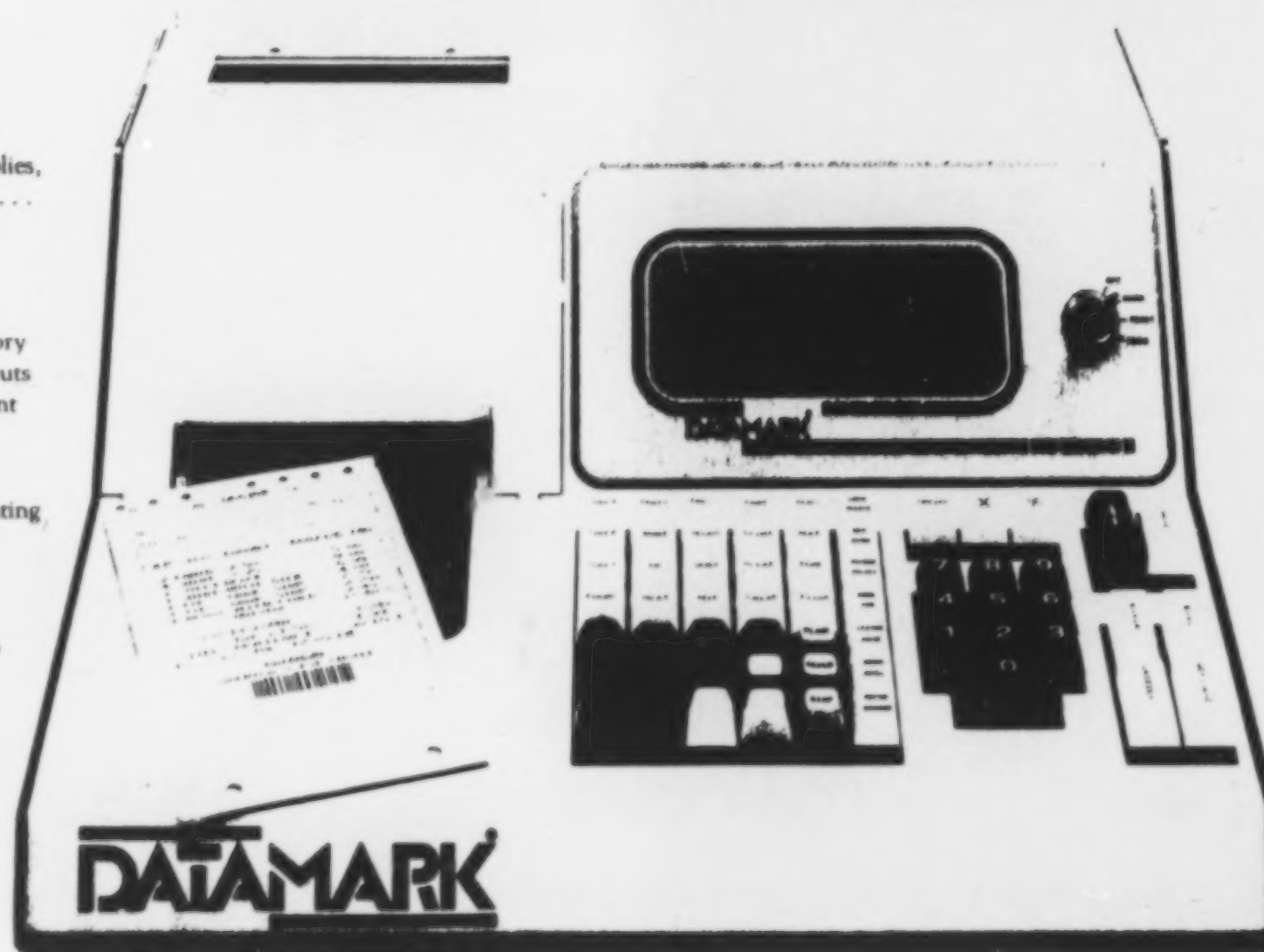
Simple and reliable, fast and  
accurate ... as easy to use  
as a calculator

Time clock and automatic  
date advance

% Discount/coupon key  
for special pricing

4 Department totals,  
tracking up to  
36 stores, operators,  
or routes

Full-travel keyboard  
featuring gold  
crossbar contacts



WIZ

WESTVIEW INSTRUMENTS, INC.  
Industrial Controls Division

(713) 668-2326



# DATA-MARK

# DATA-SCAN

AMERICA'S FIRST CHOICE

## EQUIPMENT PRICE LIST

**DATAMARK® XI** ..... 3,295.00

These are only some of the features that make Datamark America's #1 selling listing machine:

- **Simple and reliable, fast and accurate** ... as easy to use as a calculator
- **Eliminates costly mistakes** made while marking in and adding up tickets
- **Automatically prices, multiplies, discounts, taxes, and totals** ... accurately
- Provides neat, legible tickets with **consistent pricing** for you and your customers
- 100% programmable item keys for up to **84 descriptors** • **2-level keyboard** doubles the upcharge possibilities
- **3 preset pricing levels** (with manual override) and **multiple upcharges** for each garment
- **Over 65,000 pricing combinations** assures correct upcharging for all garments
- **Complete ticket review** for up to 15 garment lines
- **Multiply/void key** and **variable % discount/coupon key** (under owner control)
- **4 programmable department keys**, tracking up to 36 stores, operators, or routes
  - Automatically advances the date, day, and time
- **Automatically increments the invoice number**
  - Automatically advances the date, day, and time
  - Simple interface to the **Datascan® Bar Code Reader**
- Provides basic and necessary cash management for a laundry/drycleaning operation
- **Forces every sale through the cash register**
  - Saves and recalls **over 6500 invoices**
- **Complete invoice listings** and cash reports, including **non-clearing and closing readings** by department and route
- **Production reports by department**, including **average price/garment**, **average discount**, and **average ticket sale**
- **Rugged** ... designed to withstand the heat, lint, and chemicals found in every plant
- No hard disks, no disk drives, no diskettes, and no cooling fans
- **Full-travel keyboard** featuring gold crossbar contacts
  - Fast, bi-directional printing and **bold, high-quality print**
  - 5 year battery backup memory protection
- **Self-diagnostics** and self-testing
- **Full one year manufacturer's warranty**

**DATAMARK® PLUS** ..... 3,995.00

- Includes all **DATAMARK XI** features
  - Saves and recalls **over 3000 invoices**
- **Invoice search** by date, invoice number, customer number, or department
- Communicates with a personal computer (either locally or through a **standard telephone line**)

**DATAMARK® CONNECTION Software** ..... 495.00

- Contains all the personal computer software necessary to communicate with your **Datamark Lister**
- Allows all **Datamark** management and inventory data to be transferred directly to your home or office
- Allows remote pricing/upcharge changes and inventory adjustments
- Handles up to 100 **Datamark** Listers

**DATASCAN® Bar Code Reader** ..... 1,995.00

- Tracks 8,000 invoices from up to 4 **DATAMARK XI** or **DATAMARK PLUS** Listers
  - Identifies "extra" invoices and "missing" invoices
- Speeds up the process of taking a physical inventory
  - Stainless-steel bar code wand
- Includes a 40-column printer and connecting cables
  - Can be held in one hand
- 32-character alphanumeric display
  - 2-tier battery backup memory protection
- Fully portable with belt clip
- Convenient AC adapter for recharging long-life batteries
- **Full one year manufacturer's warranty**

ALL PRICES F.O.B. HOUSTON AND SUBJECT TO CHANGE WITHOUT NOTICE

# WIZ

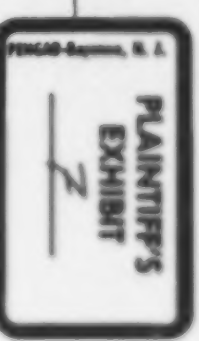
WESTVIEW INSTRUMENTS, INC.

Industrial Controls Division

6723 Stella Link

Houston, TX 77005-4397

(713) 869-2326



(713) 668-2326

## EQUIPMENT PRICE LIST

### DATA-MARK® SYSTEM 1 .....2495.00

- Provides the basics for managing cash in a laundry/drycleaning operation
- Eliminates costly mistakes made marking-in and adding-up tickets
- Automatic printing of invoice, operator and store numbers
- Offers greater upcharge and pricing revenues
- 3 Preset Pricing Levels with Manual Override
- 20 Item Keys, 12 Color Keys, 4 Pattern Keys
- Non-Clearing and Closing Cash Readings with 2 Group Cash Totals
- Easily expandable to any other DATA-MARK® System
- Bold, High-Quality Print
- 20-Character Alphanumeric Display
- Message Printing
- Complete Preset Price Print-Out
- Easy to operate, simple to program
- Self-Diagnostics and Self-Testing
- Fast, Bi-Directional Printing
- Modular Full-Travel Keyboard
- Complete Ticket Review
- 8 Garment Print Lines
- Machine Prompting
- Memory Protection

### DATA-MARK® SYSTEM 2 .....2995.00

- Includes all System 1 Features
- Non-Clearing and Closing Cash Readings with 10 Group Cash Totals
- Central Marking Capability for up to 10 Stores (or Routes)
- Accumulative and Resettable Production Report for all Items
- Complete Daily Invoice Listings for up to 500 Tickets
- 20 Programmable Item Keys, 12 Color Keys, 4 Pattern Keys
- 2 Programmable Total Keys
- Multiply Key, % Discount Key
- Easily Expandable
- 12 Garment Print Lines
- Piece Count

### DATA-MARK® SYSTEM 3 .....3295.00

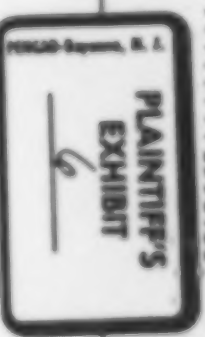
- Includes all Systems 1 and 2 Features
- Production Report, including Average Price/Item, Average Discount, Average Ticket Amount, and Percent of Sales by Item
- % Discount and Dollar Discount (Under Owner Control)
- Automatic Tax Calculation and Printing
- Complete 8000 Invoice Tracking (with Optional Datascan Bar Code Reader)
- Full RS-232C Interface
- Void Key
- Automatic Bar Code Printing

### DATASCAN® BAR CODE READER .....1995.00

- Tracks 8000 Invoices from up to 10 DATA-MARK® System 3 Listers
- Speeds-up the process of taking a Physical Inventory
- Identifies "Extra" Invoices and "Missing" Invoices
- Includes 40-Column Printer and Connecting Cables
- Fully Portable with Belt Clip
- Uses AC Adapter
- 32-Character Alphanumeric Display
- Can be held in one hand
- Memory Protection
- Stainless-Steel Bar Code Wand

### DATA-MARK® SYSTEM 3 and DATASCAN® READER PACKAGE .....4995.00

ALL PRICES F.O.B. HOUSTON AND SUBJECT TO CHANGE WITHOUT NOTICE 7/1/85





UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ADDRESS COMMISSION OF PATENTS AND TRADEMARKS  
WASHINGTON DC 20231

SERIAL NUMBER FILING DATE PUBLICATION FIRST NAMED APPLICANT ATTORNEY DOCKET NO.  
06599, V40 0-1/13/84 PHILIPSON 11 1-14-84

STEELE, CONLID & FRIED  
3232 IVE LDC.  
1700 MARKET ST.  
PHILADELPHIA, PA 19103

EXAMINER	
TECHNICAL	PAPER NUMBER
237	3

DATE MAILED:

0-3/23/84

You are recommended to pay the balance in charge of your application  
COMMISSION OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Response to communication filed on \_\_\_\_\_ ☐ This action is made final.  
A shortened statutory period for response to this action is set by statute 3 months, \_\_\_\_\_ days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENTS ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-891.  
2. ☐ Notice of Action Cited by Applicant, PTO-140  
3. ☐ Information on How to Effect Drawing Changes, PTO-1414  
4. ☐ Notice of Patent Drawing, PTO-944.  
5. ☐ Notice of Informal Patent Application, Form PTO-151  
6. ☐ \_\_\_\_\_

Part II SUMMARY OF ACTION

1. ☒ Claims 1-14 \_\_\_\_\_ are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.

2. ☐ Claims \_\_\_\_\_ have been examined.

3. ☐ Claims \_\_\_\_\_ are allowed.

4. ☒ Claims 1-14 \_\_\_\_\_ are rejected.

5. ☐ Claims \_\_\_\_\_ are objected to.

6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirements.

7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as appropriate subject matter is submitted.

8. ☐ Alternative subject matter having been indicated, formal drawings are required in response to this Office action.

9. ☐ The corrected or substituted drawings have been received on \_\_\_\_\_. These drawings are ☐ accepted.  
☐ not acceptable (see explanation).

10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed addition or substitution thereto of drawings, filed on \_\_\_\_\_ has (have) been ☐ approved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved. ☐ Disapproved (see explanation). However, the Patent and Trademark Office may require further drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached form "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1414.

12. ☐ Acknowledgment is made of the claim the priority under 35 U.S.C. 119. The verified copy has ☐ been received ☐ has been received

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under 35 USC 227c, 1995 C.D. 11, 431 O.G. 212.

14. ☐ Other \_\_\_\_\_

PTO-133a (Rev. 7-83)

EXAMINER'S ACTION

001655



599,948  
233

-2-

1. File PTO 1449 with copies of prior art discussed on pages 2 and 3 of specification.
2. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the difference between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14 are rejected under 35 U.S.C. 103 as being unpatentable over Stewart taken with the prior art discussed on pages 2 and 3 of specification.

Stewart, in column 4, line 57 and in column 6 discusses a dot matrix printer for the bar code (column 2, line 41) and selection of any desired information for the label. It would be obvious to employ these concepts with the prior art inventory systems.

4. Any inquiry concerning this communication should be directed to Examiner Harold Pitts at telephone number 703-



310

557-9626.

Pitts/karen

8/9/84

/s/  
HAROLD L. PITTS  
EXAMINER

311

IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE

In re: Application of HERBERT MARKMAN

Serial No.: 599,948

Examiner:

Filed: April 13, 1984

Group Art Unit:

For: INVENTORY CONTROL AND REPORTING  
SYSTEM FOR DRYCLEANING STORES

AMENDMENT

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

Responsive to the Official Action mailed August 23, 1984, the period for response being extended concurrently herewith, please amend the above-identified patent application as follows:

[CERTIFICATION EXECUTED BY  
STEPHAN P. GRIBOK, ESQ.]

IN THE CLAIMS

1 (amended). An inventory control and reporting system, comprising:

a data input device for manual operation by an attendant, the input device having switch means operable to encode information relating to sequential transactions, each of the transactions having articles associated therewith, said information including transaction identity and descriptions of each of said [a plurality of] articles associated with the transactions [a transaction];

a data processor including memory operable to record said information and means to maintain an inventory total, said data processor having means to associate sequential transactions with unique sequential indicia and to generate at least one report of said total and said transactions, the unique sequential indicia and the descriptions of articles in the sequential transactions being reconcilable against one another; [and,]

a dot matrix printer operable under control of the data processor to generate a written record of the indicia associated with sequential transactions, the written record including [comprising a plurality of] optically-detectable bar codes having a series of contrasting spaced bands, the bar codes being printed only in coincidence with each said transaction and at least part of the written record bearing a portion to be attached to [directly associated with] said articles; and,

at least one optical scanner connected to the data processor and operable to detect said bar codes on all articles passing a predetermined station,

whereby said system can detect and localize spurious additions to inventory as well as spurious deletions therefrom.

Cancel claim 2, without prejudice.

2.3 (amended). The system of claim 1 [2], wherein the written record comprises further indicia in addition to the bar codes, wherein the bar codes for a given transaction [and] are automatically generated by the data processor and printer immediately upon commencement of an entry for the given [a] transaction, and all unique sequential indicia generated are associated with sequential transactions, thereby preventing entry of unaccountable articles into inventory due to association of said unaccountable articles with spurious written records.

3.4 (amended). The system of claim 32, wherein the further indicia comprises alpha-numeric indicia also reflecting information, the information relating to the sequential transactions, for verifying system operations.

4.5 (amended). The system of claim 43, wherein the printer is adapted to print [operable] in a higher resolution mode[,] for printing the bar codes upon said commencement, and in a higher speed mode, for printing the further indicia upon completion of said manual operation.

REMARKS

The Amendment is submitted in response to the Official Action of August 23, 1984, wherein the Examiner rejected the claims under 35 USC 103 over U.S. Patent 4,264,396 - Stewart, in combination with the prior art discussed on pages 2 and 3 of the specification. Applicant hereby amends the claims to more particularly point out and distinctly claim the subject matter regarded as the invention, and to more clearly distinguish the invention over the cited disclosures. Every effort has been made to avoid the introduction of new matter. The number of claims is reduced, and no fee is required. The claims as amended are believed to be in condition for allowance and allowance is respectfully requested.

In support of the rejection under Section 103, the Examiner states:

Stewart, in column 4, line 57 and in column 6, discusses a dot matrix printer for the bar code (column 2, line 41) and selection of any desired information for the label. It would be obvious to employ these concepts with the prior art inventory systems.

Applicant interprets the Examiner's position as an assertion that a reasonably-routine combination of Stewart and the references cited on page 2 and 3 of the specification would reach the invention. Although applicant agrees that Stewart teaches a unit for printing of bar code indicia on labels concurrently with the use of the labels, Stewart's

disclosure taken in combination with all or any part of the references mentioned in the specification still fails to disclose or suggest the claimed invention to a person of ordinary skill in the art. The specification mentions Patent 3,876,075 - Wesner, 3,478,316 - Block et al and 4,340,810 - Glass. Wesner teaches a means of keeping a running inventory total, Block teaches use of scannable tags for laundry items and Glass teaches scannable tags for general warehouse use. Applicant's claimed invention involves more.

According to the claimed invention, the generation of concurrent, unique, transaction-identifying indicia in the form of optically-scannable bar codes is part of a specific system that is characterized by increased security over the usual invention system. Unlike the usual system in which apparatus generates non-unique indicia (e.g., Stewart's price indicia) and/or indicia that is not produced concurrently with the commencement of a transaction (e.g., pre-printed tags), applicant's system is operable to keep a running reconcilable inventory total by adding input articles and subtracting output articles, and also protects against the possibility of undocumented or spuriously-documented articles entering the system. Accordingly, the claimed system is particularly applicable to retail drycleaning establishments.

Applicant respectfully requests that the Examiner note that there are features present in applicant's independent claim 1 that relate not only to means for production of bar code indicia, but also to uniqueness of indicia and recited means operable to prevent indicia becoming available except upon commencement of a transaction. Means are also provided for reconciling the very same unique and



concurrently-generated indicia at later points during processing whereby the entry or exit of inventory articles in irregular ways can be localized.

In the prior art inventory system, totals are maintained but no effort or apparatus is devoted to detecting spurious transactions. As described in the specification, some basic difficulties with retail drycleaning establishments relate to the fact that attendants sometimes process undocumented articles through the system and pocket the proceeds. Another difficulty is that the loss, misplacement or separation in process of even a single article of even relatively-minor value will have a major impact on the customer's estimation of the quality of the establishment. These features distinguish drycleaning-type applications of inventory control from the usual warehouse application. In a warehouse application, retail sales application or the like, the problems are entirely different. In these situations, the objective is to keep a running total (for re-ordering, etc.) and to collect non-unique materials into a batch (for shipping and billing). Use of bar code indicia in these applications does not disclose or suggest to a person of ordinary skill that it would be advisable, or possible, or how any inventory or marking apparatus might be advantageously used in a laundry and drycleaning situation.

The Examiner cited Stewart in combination with the usual inventory control system, asserting that Stewart makes it obvious to print bar codes reflecting "any information". Applicant respectfully requests that this position be reconsidered in view of the claims as amended. Stewart fails to disclose or suggest a code printing system to concurrently

generate unique indicia for tracking a transaction. At column 2, lines 39-40, the Stewart label is printed with the name of the store as well as the article price. These indicia will be identical for all articles of the same type. Similarly, at column 5, lines 27-37, Stewart specifically teaches that the microprocessor is programmed for printing price information for automatic scanning.

There is no disclosure or suggestion in Stewart that there would be any benefit whatsoever to using concurrently-generated unique bar code indicia as a means of increasing the securing of transaction-identifying tags. Stewart ignores the entire concept of security and uniqueness of transactions or articles. In view of the benefits in security to be obtained according to the claimed invention, any general statements in Stewart about the information to be printed fail to disclose applicant's invention. Stewart's examples, and Stewart's disclosure, teach only printing of no-unique indicia such as price.

The claims as amended are not directed to a basic printer of bar code indicia per se, nor to devices for printing transaction-identifying indicia per se. Instead, as taught [sic] and claimed only by applicant, there is a specific benefit in the security of inventory control systems, and especially such systems characterized by a plurality of articles associated with unique transactions, that the system be operable with unique bar code indicia, generated only in coincidence with (e.g., upon commencement of) the transaction. In this manner, as fully described in the specification, it is not possible to take advantage of pre-printed bar code tags. The attendant cannot unaccountably

discard the tags (because they are uniquely associated with the sequential transactions), and cannot add or subtract any article from inventory without that article being reconcilable at at [sic] least one optical scanning station.

Other benefits also accrue. The concurrently-printed codes are substantially cheaper than multi-part pre-printed forms. The generation of identifying indicia upon commencement handles data entry and marking in a convenient and nearly-foolproof way.

Assuming *arguendo* that a person of ordinary skill in the art was to attempt a combination of the teachings of Stewart, Block et al and Wesner, he would combine the references consistently with their teachings. The skilled person might generate price labels for a transaction to be read upon delivery of the goods to the customer; keep a master record of the number of transactions in progress by adding and subtracting the input and output items respectfully as in Wesner and Block et al. These references, however, lack any disclosure or suggestion that the further features of a means for associating transactions with unique indicia that limits the production of indicia. Only applicant's equipment is operable to produce unique transaction-identifying indicia upon commencement of a transaction and not otherwise. Together with optical scanning means for later processing, applicant's device substantially increases the accuracy of inventory control by effectively eliminating the possibility of spurious transactions by misuse of unique indicia labels.

The claims as amended particularly point out and

distinctly claim the subject matter required to reach these benefits. In independent claim 1, the system is recited as not only including an input and printing device as in Stewart, but also totalizing, reporting and optical scanning means as well. Furthermore, claim 1 recites features relating to the uniqueness of the indicia produced by said means and the printing of the unique indicia only in coincidence with transactions. In claim 2, the printed bar codes are indeed dot-matrix bar codes, but unlike the teaching of the references, the bar codes produced represent unique sequential indicia. Claim 3 specifically recites the interaction of the data entry, totalizing and scanning elements that together with unique generation of indicia upon commencement of a transaction preclude unaccountable entry of articles into inventory as well as unaccountable exit.

Further refinements of the invention which are recited in the claims and are likewise missing in the references relate to the mixture of optically-scannable and alphanumeric indicia, generated at different print speeds, the multi-part nature of the printed media, the reconcilable nature of the system at any of various stations besides the initial receipt or ultimate delivery, and a unique keyboard data entry device that ties the package together. The subject matter in these claims as well as in independent claim 1 relate not only to general purpose inventory control or general purpose totalizing, but also the specific usefulness of concurrently-generated unique bar code indicia in a laundry and drycleaning establishment, together with the integration of such a system into the pricing, marking and actual article [sic], processing to improve the entire operation.

Every effort has been made to amend the claims to distinguish over the references cited by both the Examiner and by the applicant. The claims as amended are believed to patentably distinguish over the references whether taken along or in any combination of features that might reasonably be undertaken by a person of ordinary skill aware of the disclosures. The claims are believed to be in condition for allowance and prompt allowance is respectfully requested.

Respectfully submitted,

Date: 22 Feb 1985

/s/  
Stephan P. Gribok  
Reg. No. 29,643  
STEELE, GOULD & FRIED  
3232 IVB Building  
1700 Market Street  
Philadelphia, PA 19103  
(215) 563-8020

Docket: 1062-1

Reissue Litigation

IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE

In Re: Application of Herbert Markman

Serial No.:

Examiner:

Filed:

Group Art Unit:

For Reissue of Patent No.: 4,550,246

Issued: October 29, 1985

For: INVENTORY CONTROL AND REPORTING  
SYSTEM FOR DRYCLEANING STORES

REISSUE DECLARATION AND POWER OF  
ATTORNEY BY INVENTOR

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

As a below named inventor, I hereby declare that: My residence and post office address are 631 Fariston Drive, Wynnewood, PA 19096. I am a U.S. citizen. I believe I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 4,550,246 granted on October 29, 1985 and in the attached



specification and claims, and for which invention I solicit a reissue patent.

I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

No applications for patent or inventor's certificate have been filed by me or on my behalf at any time prior to the filing date of application SN 599,948 resulting in Letters Patent 4,550,246. An application for patent in Canada, SN 494,168 was filed on October 29, 1985.

I believe that original Patent No. 4,550,246 is partly invalid or inoperative because of error without any deceptive intent on my part, by virtue of my claiming less than I had a right to claim in the patent, and by virtue of an inadvertent failure to comply with the examiner's requirement for submission of copies of prior art which was otherwise identified in the specification, except for two references as noted below.

The following discussion of limitations in the claims as issued show that I claimed less than I had a right to claim. In each case, the unnecessary limitations were discovered during the initial stages of litigation instituted by Max Business Systems, Inc. ("Max"), plaintiff in Civil Action No. C87-927A filed on or about May 8, 1987 in the U.S. District Court for the Northern District of Georgia, for

declaratory judgment of non-infringement and invalidity of U.S. Pat. 4,550,246. Max asserts that an inventory control and reporting system believed by me to fall within the fair scope of my invention does not infringe the claims thereof.

The limitations which render the claims unnecessarily narrow over all known prior art, are:

1. Tracking of Individual Articles

It may be argued that the claims are limited to a system that tracks individual articles such as individual pieces of clothing brought by a single consumer to a drycleaning establishment or the like. I believe that tracking of a transaction whether it involves one article or several is properly disclosed and allowable. The claim language recites entry of "descriptions of each of said articles associated with the transactions". This passage is more limited than I had a right to claim because, although individual articles, e.g. a pair of pants, could be accounted for by individual marking, scanning and reconciliation in reports, the grouping of such articles into sets for tracking (e.g., a suit comprising pants under jacket and/or a suit and a Dress or other spearable [sic] articles grouped together) is reasonably disclosed as forming part of the invention and is allowable over the prior art. Accordingly, I seek to correct the patent by inserting claims describing the information entered more broadly as --data relating to the transactions-- rather than "descriptions of each of said articles".

## 2. Continuously-Numbered Indicia

It may be argued that my patent claims are limited in scope to indicia which must be sequential, continuously-numbered indicia; and not merely unique indicia assigned sequentially to the transactions. The invention is fairly defined as requiring only that an indicia be uniquely associated with individual transactions, such that the transactions can be thereafter tracked or traced. However, the security, benefits and operability of the system according to the invention are achieved as a result of the uniqueness of the indicia and the coincidence of a unique indicia with each transaction. These result from unique indicia being assigned sequentially to sequential transactions; and not from continuous-numbering indicia used. The point at which a "transaction" is born could be defined as the point of arrival, bundling, etc.; however, according to my invention a unique indicia is associated with each transaction, in substantial coincidence with each transaction reaching some defined point at which the unique indicia is assigned, tracking is thereafter possible. Continuously sequential numbering is not required to accomplish tracking in my computerized system, nor is it necessary to distinguish over the prior art. Accordingly, I seek to correct this possibly misleading interpretation [sic] my invention by securing broader claims without the term "sequential" as a modifier of indicia alone, reciting instead that unique indicia are --sequentially assigned to the transactions--.

## 3. Continuously-Reported Inventory

It may be argued that my patent claims are limited in scope to systems only in which an inventory total is "maintained" by being incremented every time a new transaction is added to inventory and decremented [sic] every time a completed transaction is removed from inventory. The invention is fairly defined, however, as also encompassing a system in which the information needed for generating the inventory total is maintained and reflects the additions and deletions, but no particular register is actually counted up and down until this information is used for generating an inventory report, i.e., when such information is called for by an operator. I regard the difference between constantly maintaining an inventory total, on the one hand, and maintaining the information by which the total is generated periodically or intermittently on command, on the other, as fully equivalent. Therefore, any claims limitation requiring continuing inventory totals is unnecessary to distinguish over the prior art. I seek to prevent this interpretation and correct the error, by reciting means for generating an inventory report, rather than necessarily means to "maintain" a total.

## 4. Dot Matrix Printer

I was mistaken in believing that a dot matrix printer is required to print bar codes. I now know that other types of printers will print bar codes. I

seek to correct this error by deleting "dot matrix" in broader claims.

5. Connection of Optical Scanner and Data Processor

It may be argued my patent claims are limited in scope to at least one optical scanner which is at all times "connected" to the data processor, being operable to detect the bar codes on all articles passing a predetermined station. The invention is fairly defined as including an arrangement in which an optical scanner is used to generate and temporarily store a list of scanned bar codes, which are thereafter downloaded from the optical scanner to the data processor during a temporary connection. Such a limitation is not necessary to distinguish over the prior art. I seek to correct this incorrect interpretation, and accordingly seek broader claims changing the recited relationship of the optical scanner and data processor from "connected to" to -- for data communication with--.

6. Grammatical Form of Means Clauses

Correction of the above-noted matters in the new broad claim requires that a number of "means" clauses be rewritten in the more classical form of "means for [verb in gerund form]". The claims have been amended to avoid such errors in grammar and consistency. The foregoing errors occurred innocently and with deceptive intention.

In addition to the foregoing unnecessary limitations found in the claims as issued, reissue is requested to correct an inadvertent error wherein prior art known to applicant and his attorneys, and identified in the specification, was nevertheless inadvertently not filed responsive to the examiner's requirement that copies of the prior art be filed. In the single official action in the application, the examiner required that applicant file copies of the references mentioned in the Prior Art section of the specification. Although I believed that the reference copies had been filed, in fact they had not. (See Declaration of Stephan Gribok, submitted concurrently).

None of these were described in the unfiled Information Disclosure Statement except to note that some were discussed in the specification and the remainder were of "general interest".

Notwithstanding the inadvertent failure to comply with the examiner's requirement for copies of references from the specification, the references were at most cumulative with those already cited by the examiner. The examiner cited Block, U.S. Pat. 3,478,316, which concerns inventory control in connection with a laundry or retail establishment including automatically-scannable tags. The examiner also cited U.S. Pat. 4,264,396 - Stewart, which concerns a general purpose bar code printing machine. I had stated in the specification that bar codes were known, and inventory control systems were known. The claimed invention, however, which is not found in, disclosed or suggested by any of the references, concerns a specific inventory control system in which bar codes are generated in



coincidence with initiation of transactions brought into inventory such that the transactions and the generation of bar codes are [sic] have a one-for-one relationship. This makes it impossible to have an undocumented transaction in inventory (because no bar code would be attached to any undocumented transaction) or to surreptitiously remove a transaction having a bar code associated therewith (because manual correction of the data processor's memory file would be necessary to delete the record of this documented transaction and thereby avoid detection).

The three references that were required, but inadvertently not supplied to the examiner, were described in the specification. One of these, Block, et al, U.S. Patent 3,478,316, was supplied by the examiner. Therefore, two references namely Wesner, U.S. Pat. 3,876,075, and Glass, U.S. Pat. 4,340,810 were not submitted in full text. Wesner teaches an automated laundry counting system based on a computer, and accordingly is cumulative with Block, of record. Glass, Pat. 4,340,810 teaches bar code printing in connection with a general warehouse inventory control system. However, the bar code is pre-printed on tags according to Glass, and is used to label outgoing packed boxes. The bar code is not generated in coincidence with the addition of a new traceable transactions to inventory. Glass teaches that machine readable codes are useful because they cannot be hand altered. A plurality of pre-printed labels for individual items, cartons and distribution lists are produced ahead of time. When the items are loaded in a carton or the like, the pre-printed label applicable to the carton is selected and attached to the carton. Therefore, this reference also lacks coincidence between receipt of items for

a transaction and generation of the machine-readable code.

The references mentioned in the Information Disclosure Statement that was prepared but inadvertently not filed are all filed in the Information Disclosure Statement submitted concurrently herewith. It is believed that the invention is patentable over the references mentioned, particularly because the subject references are cumulative, at most, with those cited by the examiner.

Max Business Systems, plaintiff in the declaratory judgment action seeking invalidity of my patent, has included in its complaint three published articles which are asserted to establish that my invention is not patentable. I was not aware of the articles until Max filed its complaints. The three articles are from Modern Materials Handling. They include examples of inventory control systems based upon preprinted bar codes, and general purpose bar code printers. These references are therefore also cumulative with those already of record in the application. Nowhere in the references, nor in their combination, is there any teaching that security is improved by specifically generating the bar code in coincidence with initiation of transactions into inventory such that undocumented transactions can be detected either by their missing a machine-generated code or by their unofficial removal from inventory after generation of a machine readable code indicates that they have been received.

In summary, patent 4,550,246 is wholly or partly inoperative or invalid due to my claiming less than I had a right to claim and due to the inadvertent noncompliance

with the examiner's requirement for copies of the prior art mentioned in the specification. The claims presented herewith are amended to remove limitations that were unnecessary to distinguish the invention over the prior art. The claims have also been amended to better comply with 35 USC 112, second paragraph.

#### POWER OF ATTORNEY

I hereby appoint the following persons as my attorneys to transact all business in the Patent and Trademark Office in connection with this application, with full power of revocation and substitution, and to receive the Letters Patent, and request that correspondence be held with said attorneys at the address shown:

J. Rodman Steele, Jr.	-	Reg. No. 25,931
Lewis F. Gould, Jr.	-	Reg. No. 25,057
Harvey D. Fried	-	Reg. No. 28,298
Stephan P. Gribok	-	Reg. No. 29,643
Karl L. Spivak	-	Reg. No. 18,934
Gregory A. Nelson	-	Reg. No. 30,577
John Lezdey	-	Reg. No. 22,735

Steele, Gould & Fried  
1700 Market Street, Suite 3232  
Philadelphia, PA 19103  
Telephone (215) 563-8020.

And, I declare further that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further

that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001, and may jeopardize the validity of the application or any patent which may issue thereon.

Date: 8/27/87

/s/

Herbert L. Markman